Space Weather Forecast

Issued on Monday, 04 September 2023 at 01:30 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: A chance of further isolated Moderate-class flares day 1 (04 Sep). A chance of G1/Minor Storm conditions day 1 (04 Sep) reducing to a slight chance on subsequent days.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate levels of activity with a couple of Moderate flares from an active sunspot region that has now rotated over the northwest limb. Eight sunspot regions remaining on the disc appear small and largely inactive, though there has been slow development of a region in the southeast as well as two new areas in the northeast.

Coronal Mass Ejections (CMEs) associated with numerous flares from the active sunspot just over the northwest limb are missing ahead of Earth orbit. A number of filament (arc of the sun's plasma) eruptions have been observed on the visible disc in the past 24 hours. None have definitively been assessed as having a significant Earth-directed component, though further imagery is required to confirm this.

Solar Wind / Geomagnetic Activity: Ongoing fast winds from a high speed stream gave Elevated solar winds at first, with the influence gradually easing during the period to Slightly Elevated levels, though this likely included some limited influence from one or both of the CME arrivals that were forecast. Total Interplanetary Magnetic Field (IMF) was largely Weak at first, but briefly increased to Moderate at times. The important north-south direction was predominately southward. Geomagnetic activity was Active to G1 Minor Storm (Kp4-5) between 03/0000-1200 UTC, since reducing to mainly Unsettled (Kp3), but with a Quiet interval from 03/1800-2100 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at normal background levels throughout.

Four-Day Space Weather Forecast Summary

Solar Activity: A chance of further Moderate activity day 1 (04 Sep), with isolated Moderate flares possible from the active sunspot region just over the northwest limb. Activity then easing to mainly Low as this rotates further onto the far-side, with the other spots on the disc currently smaller and simpler.

Solar Wind / Geomagnetic Activity: Solar winds under the influence of the fast wind from a coronal hole should continue on day 1 (04 Sep) before another coronal hole likely increases speeds to Elevated once again into day 2 (05 Sep). This is one of a few fast wind influences that could occur through the period with enhanced winds continuing throughout. There is a slight chance of a glancing impact from CMEs on day 1 and 2. Mainly Unsettled to Active geomagnetic activity is expected early on day 1 (04 Sep), with a chance of G1 Minor Storm at first. Activity reducing to Quiet to Unsettled for a time, but likely increasing to Unsettled or Active again later in the UTC day or into day 2 (05 Sep), with a slight chance of G1 Minor Storm intervals. Activity through the rest of the period is likely to vary mainly between Unsettled and Active, but with a slight chance of isolated G1 Minor Storm intervals.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Space Weather Forecast

Energetic Particles / Solar Radiation: High energy protons are expected to continue at background levels, but with a slight chance for a Minor proton storm (S1) on day 1 (04 Sep), in association with any further notable flares from the active sunspot that has just rotated over the northwest limb. As this area rotates further around the far side by day 2 (05 Sep) the risk is much reduced.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	30	20	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	25	10	10	10
Very Active	R3 to R5 X	No	2	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.